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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,488	08/30/2001	Hans-Helmut Bechtel	DE 000132	8003

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EXAMINER

ROY, SIKHA

ART UNIT PAPER NUMBER

2879

DATE MAILED: 01/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/942,488

Applicant(s)

BECHTEL ET AL.

Examiner

Sikha Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on September 5, 2000. It is noted, however, that applicant has not filed a certified copy of the German application (Application No. 1004353.0) as required by 35 U.S.C. 119(b).

Claim Objections

Claim 4 is objected to because of the following informalities:

Page 8 line 15 '(Sr,Mg)₂P₂O₇:Eu' should be replaced by --(Sr,Mg)₂P₂O₇:Eu,--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 02120389 to Hagiwara et al.

Regarding claim 1 Hagiwara et al. disclose (please see Constitution) a fluorescent screen provided with a blue phosphor comprising first phosphor having emission in the range from 440 to 460 nm and a second phosphor having light emission in the range from 410 to 430 nm.

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Regarding claims 2, 3 and 4 Hagiwara disclose the second phosphor to be Eu^{2+} activated $\text{Sr}_2\text{P}_2\text{O}_7\text{:Eu}$ having an emission peak at 410-430nm.

Regarding claim 8 Hagiwara et al. disclose (for second embodiment) the first phosphor with light emission peak at 452 nm is $(\text{Sr,Ca})_{10}(\text{PO}_4)_6 \text{Cl}_2\text{:Eu}$.

Alternately claims 1-4 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent 5,684,359 to Yano et al.

Yano et al. disclose (column 6 lines 55-60) fluorescent lamp having mixture of two blue phosphors comprising first phosphor with peak emission in the range 435nm and 460 nm and second phosphor with peak emission in the range from 400 to 430 nm.

Regarding claims 2,3 and 4 Yano et al. disclose (column 6 lines 55-60) the second phosphor to be Eu^{2+} activated $\text{Sr}_2\text{P}_2\text{O}_7\text{:Eu}$ having an emission peak at 400-430nm.

Regarding claim 8 Yano et al. disclose the first phosphor to be $(\text{Sr,Ca})_{10}(\text{PO}_4)_6 \text{Cl}_2\text{:Eu}$.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 5, 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02120389 to Hagiwara et al. and further in view of U. S. Patent 5,277,841 to Jeong et al.

Regarding claims 5 and 6 Hagiwara et al. do not disclose the phosphor layer comprising mixture of particles of first phosphor and particles of second phosphor, where the proportional quantity of second phosphor lies between 5 and 50% by weight of the second phosphor in relation to that of first phosphor.

Jeong et al. in analogous art of mixed blue emitting phosphors disclose (column 2 lines 25-56, column 4 lines 63-68, Table 2) a mixed blue emitting phosphor obtained by mixing 90 wt.% of ZnS:Ag (first phosphor) with 10 wt.% of $Y_3(Al,Ga)_5O_{12}: Tb$ (second phosphor). It is further noted that this mixed blue emitting phosphor has excellent phosphor characteristics and improved emission luminance (Table 2, sample #1-3).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include second phosphor particles of Hagiwara et al. mixed physically in the amount of 10 wt.% in relation to that of the first phosphor as taught by Jeong et al. for improving phosphor characteristics and emission luminance of the fluorescent screen.

Regarding claim 9 Jeong et al. disclose (column 1 lines 5-15) this blue-emitting phosphor with improved luminance and luminance-saturation characteristics used for cathode ray tubes.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02120389 to Hagiwara et al. and further in view of U. S. Patent 5,866,977 to Lee et al.

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Claim 7 differs from Hagiwara et al. in that Hagiwara et al. do not exemplify the phosphor layer comprising a base layer of first phosphor and a covering layer of second phosphor.

Lee et al. in relevant art of phosphor screen disclose (column 2 lines 20-36) blue phosphor is formed in two layers, first layer formed on the second phosphor. It is noted that this double layer phosphor shows preferable brightness and color reproduction (column 1 lines 5-11).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to produce the phosphor layer of Hagiwara et al. by depositing the second phosphor on the first phosphor layer as taught by Lee et al. for improving brightness and color reproduction.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited to further show the state of the art with respect to cathode ray tube with mixed phosphors.

U. S. Patent 5,200,667 to Iwasaki et al.

JP 02135276 A to Hitachi LTD.

Contact Information

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Sikha Roy
Patent Examiner
Art Unit 2879



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